

## CLAIMS

Having thus described the invention, what is claimed is:

1. A system for the reforming of a laser beam having a circular sector shaped beam cross section into a laser beam with a rectangular beam cross section, includes in the beam path a mirror with a reflective surface shaped in the form of a circular sector of a parabolic rotational body.
2. The beam reforming system in accordance with Claim 1, wherein said reflective surface is the convex or concave surface of a parabolic rotational body.
3. The beam reforming system in accordance with Claim 2, wherein such parabolic rotational body is in the form of a rotational paraboloid.
4. The beam reforming system as in accordance with Claim 2, including a filter positioned in the line focus of the circular sector of the parabolic rotational body.
5. The beam reforming system as in accordance with Claim 3, including a filter positioned in the point focus of the circular sector of the rotational paraboloid.

6. The beam reforming system in accordance with Claim 1, including an optical element interposed in the beam path after the circular sector, said optical element having at least one surface serving to reform the laser beam in two mutually perpendicular directions.

7. The beam reforming system in accordance with Claim 6, wherein said optical element is a bifocal lens.

8. The beam reforming system in accordance with Claim 6, wherein said optical element consists of several components.

9. The beam reforming system in accordance with Claim 8, in which said components of said optical element comprise a cylindrical lens and at least one parabolic cylindrical mirror.

10. A coaxial laser resonator with an annular discharge chamber and a circular sector shaped output opening and a beam forming system including a mirror with a reflective surface shaped in the form of a circular sector of a parabolic rotational body.

11. A laser in accordance with Claim 10 wherein said circular sector of said parabolic rotational body is coaxially aligned with the circular sector axis of the laser beam incident thereon.